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COMPREHENSIVE REGIONAL TRANSIT SERVICE PLAN



TranSystems



Regional Transit Coordinating Council (RTCC)
November 21, 2008

strategies

business



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1.0 Executive Summary

In August 2007, the Regional Transit Coordinating Council unveiled a Vision Plan for transit in Southeast Michigan. The next step was the preparation of the Comprehensive Regional Transit Service Plan which began in January of 2008. The intent was to provide a more detailed analysis of the existing transit services in the region, recommend enhancements and to develop a recommended transit network for Southeast Michigan (including Wayne, Macomb and Oakland Counties) and to include commuter rail (CRT) service to/from Washtenaw, Monroe and St. Clair counties.

The Comprehensive Regional Transit Service Plan recommends the phased implementation of transit services, resulting in a 2035 network, shown in Figure 1 below.

Key features of the recommended network include:

- Enhancements to Existing Services:
 - Improved service frequency, additional routes, increases in Community Transit and paratransit services, improved waiting environments at bus stops
- Introduction of Rapid Transit Corridors throughout the region:
 - Arterial Rapid Transit (ART) services are the backbone & catalyst of the system
 - Services can become Bus Rapid Transit (BRT) or Light Rail (LRT) "If and only if" ridership and cost characteristics warrant
 - Light rail on Woodward Phase 1 will be a privately funded project
 - Commuter rail from Detroit to Ann Arbor, a SEMCOG project

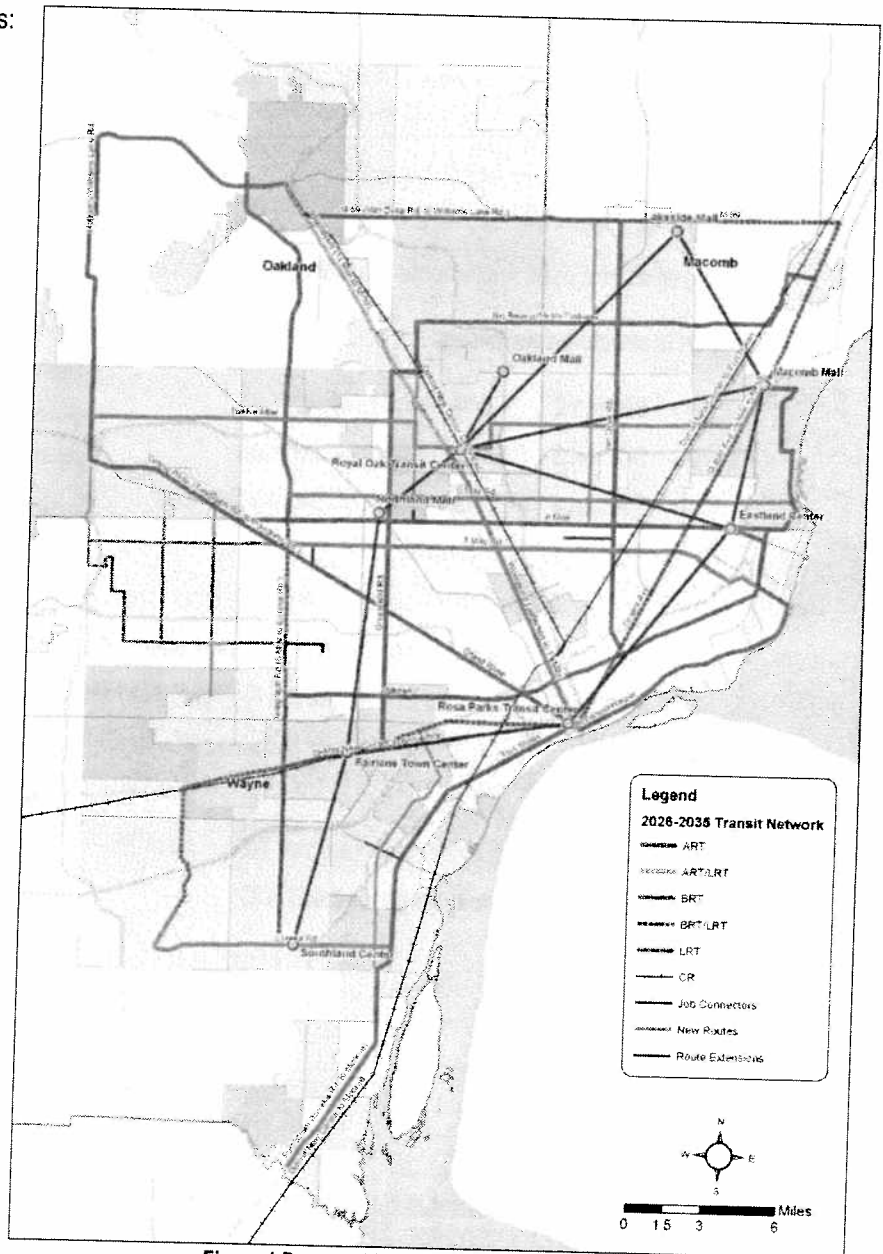


Figure 1 Proposed Regional Transit Network 2035

The recommended network provides many benefits to the Southeast Michigan region.

- Transit travel time decreases nearly 20% by 2015 and over 30% with the 2035 network in place. Additionally, many trips that cannot be made by transit today will be possible and realistic choices to residents of Southeast Michigan.
- Connections to other parts of the regional transportation network such as park and ride lots, bicycle networks, greenways will improve mobility in the region for all.
- For every dollar spent on transit, the region will gain between \$4 and \$8¹. Economic benefits come from jobs and housing that are attracted to corridors with transit. When transit is a part of aggressive economic development plans, the results can move from 'good' to 'great'. Strong fiscal benefits to local communities and the State as a result of this development.

To implement the Comprehensive Regional Transit Service Plan, a regional transit organization must be established. This organization should have the powers to fund, plan, build, implement and operate transit services throughout the region. Three to six counties of the Southeast Michigan region should be a part of this region.

A regional dedicated source of funding is needed to implement this plan. The regional funds are needed to match Federal capital dollars or to bond capital projects. It is also needed to provide on-going operating funds.

The timing of all proposed implementation plans is based on the initial parts of the network being funded before 2013.

This report is structured as follows:

- Section 2 Goals and Objectives
- Section 3 Status of Current Services
- Section 4 Enhancement of Existing Services
- Section 5 Description of High Capacity Transit Modes
- Section 6 Regional Agency Organizational Recommendations
- Section 7 Introducing Rapid Transit Corridors – Phased Implementation
- Section 8 Mobility Benefits of the Regional Transit Network
- Section 9 Economic Benefits of Transit Investment
- Section 10 Network Costs
- Section 11 Funding the Regional Transit Network
- Section 12 Next Steps for the RTCC

¹ Street Smart: Streetcars and Cities in the Twenty First Century. Shelley Poticha and Gloria Ohland. 2006, Pages 3-4

The Benefits of Public Transportation, Essential Support for a Strong Economy. APTA

Public Transportation and the Nation's Economy: A Quantitative Analysis of Public Transportation's Economic Impact. Cambridge Systematics, Inc. 1999

Portland Streetcar Development Oriented Transit. Portland Office of Transportation and Portland Streetcar, Inc. 2006

2.0 Goals and Objectives

The Regional Transit Coordinating Council (RTCC) is responsible for allocation of federal transit funds and planning for transit in Southeast Michigan². In August 2007, the RTCC published the Vision Plan which provided a history of transit in Southeast Michigan, summarized previous plans and identified some broad direction and timeframes for enhanced transit in the region. Through the Detroit Regional Mass Transit Initiative (DRMT) of the RTCC, the development of a comprehensive regional transit plan was viewed as the next step in advancing regional transit planning in Southeast Michigan. This report documents the Comprehensive Regional Transit Service Plan for Southeast Michigan (CRTSP), building upon the work that has been previously done in the region and adding new innovative and cost-effective strategies that enable this plan to address the many varied transit needs of the region and promote economic development. The focus of this plan is to identify a network of services for the region that will enhance economic development and maximize public mobility in the tri-county Southeast Michigan region.

2.1 Goals

Key goals of the RTCC include:

- Providing safe, affordable, clean, convenient, on-time transit service
- Providing better transit options to seniors and the disabled
- Promoting Transit Oriented Development
- Promoting regional economic growth
- Make Southeast Michigan a destination to attract and retain younger residents
- Increasing overall access to workplaces, healthcare providers, entertainment/sports events, retail establishments and cultural venues
- Making it happen as soon and as cost-effectively as possible

2.2 Objectives

The Comprehensive Regional Transit Service Plan for Southeast Michigan was scoped to meet the following objectives of the Regional Transit Coordinating Council.

- Work with existing transit providers to plan for and coordinate improvements/enhancements of existing transit services and the connectivity with new mass rapid transit systems
- Plan for and coordinate the development of new rapid mass transit systems in key transportation corridors
- Identify and recommend to the Michigan Legislature, the Governor, the three county leaders, the Mayor of Detroit, local municipalities and the Federal legislature, strategies of funding (including possible legislation) the development and operation of new and enhanced mass rapid transit in Southeast Michigan

² Throughout this report, Southeast Michigan refers to the three county area including Macomb, Oakland, and Wayne Counties.



3.0 Status of Current Services

In conducting the Comprehensive Regional Transit Service Plan project, it is first important to assess the status of transit services in Southeast Michigan. This provides a baseline from which to understand – from a factual basis – how transit is performing. To accomplish this, two distinct analyses were conducted. The first analysis looked at how the Southeast Michigan region compares to transit provided in other top metropolitan areas. The second analysis looked at how the current transit operators, DDOT, SMART and DTC (the People Mover) compare to their peers.

3.1 How the Southeast Michigan Region Compares to Other Metro Areas

Transit in the Southeast Michigan region was compared to transit in the top 25 metropolitan regions in the country. Key findings from this analysis indicated the following:

- Southeast Michigan is the largest region in the U.S. without high capacity rapid transit service in place or in development, which requires SMART and DDOT to run longer and less cost-effective bus routes.
- While the built environment is favorable for transit service (11th highest density of the top 25 metropolitan regions), the region ranks near the bottom for transit funding (23rd of the 25 largest metro areas).
- The Southeast Michigan region spends \$75 per capita annually on transit services, while the average of the top 25 metropolitan regions is \$184 per capita annually.
- Many other regions enjoy a higher level of financial support from local and state sources than is present in Southeast Michigan.

3.2 How Local Operators Compare to Peers

The performance statistics for each of the three operators in the region (DDOT, SMART and DTC) were evaluated. For each operator, trend analysis of their performance is compared to other 'peer' transit agencies (agencies operating similar service in similar operating environments). Key findings of this analysis follow:

- Service provided by SMART, DDOT and DTC is good, considering the relatively low funding available for transit today.
- The coverage of the region served by Southeast Michigan's public transit providers has large gaps in the urbanized area because of opt-out areas.
- Limited operating funds cause service level problems.
- The efficiency and effectiveness of the local transit providers has been steadily improving in recent years, however there are some key structural cost issues that hamper the operator's ability to perform as well as their peers.
 - Both of the regions' transit providers have higher vehicle maintenance costs than their peers. DDOT and SMART have worked to lower their cost in the past four years but still remain significantly above their peers.
 - SMART and DDOT average vehicle and passenger miles are greater than peers due to lack of regional or commuter rail services operating in the region. By traveling longer distances, Southeast Michigan bus service costs more to provide than other areas. The longer distances wears on equipment more which leads to higher maintenance costs. One advantage this does give Southeast Michigan transit users, is that they travel longer for less cost and with fewer transfers.
 - Fares cover a lower percent of costs in Southeast Michigan than for peer transit agencies. SMART and DDOT collect on average 50% less than their peers. Even though the region was one of the first regions without rail to increase the basic fare to \$1.50 in 2002 most others have since passed this fare level.
- There are only two similar systems to DTC. Generally, DTC compares well to the other similar services.
- Current cross-regional transit service lacks informational connections. DDOT and SMART work together on many issues, but public communications and consistent service planning connections need work. Information at the bus stop level needs improvement, especially when there are shared stops.

3.3 Opportunities for Enhancement Through Coordination

Through the assessment of the existing services, several issues related to coordination of services were identified. There are several things agencies can do now to improve the customer experience. Some of the recommendations are priorities of the agencies, but cannot be accomplished because there is a lack of funding or leadership. There are some good examples of cooperation between the agencies in some areas, for example DDOT, SMART and DTC are working together to improve the information that is available to customers as evidenced by the recent move to have schedule information available on the internet on the Google Transit website. The following recommendations build on the good efforts that have been made already.

3.3.1 Joint Public Communications

Each agency in the region has their own communications style to fit their audience and customers. There are, however, some communications that are needed to improve the ability of infrequent riders, tourists, or people who are attempting to use the three systems for their journey. The RTCC should consider leading the effort for joint public communications among the regional transit providers in Southeast Michigan. Some specific recommendations are described below.

Common Phone Number

The regional transit providers should have a single phone line for transit information. There are several areas in which, SMART, DDOT and DTC can improve the transit experience through public communications. Establishing a single location for transit information would have a big impact. One common phone line could be established to access general transit and travel information for the three agencies. This could replace each agency's phone number, providing greater customer convenience. This effort would greatly enhance customers' ability to more easily access the services that currently exist. The need for this is becoming increasingly important with the growth in the region and the greater need to travel between the suburbs and the city.

Regional System Map

A regional system map should be developed to represent all transit services in the region. The development of a regional system map would be a quick, inexpensive way to provide information and promote usage of all the services in Southeast Michigan. Currently transit customers have to carry DDOT, DTC and SMART maps if they wish to use all the systems. While this may not be necessary for the experienced transit user, it is an impediment to infrequent users and tourists. The map should also include information about connections to Transit Windsor and Mass Transportation Authority - Flint who provide service to the edges of the three county Southeast Michigan region.

Common Bus Stop Signage

Joint bus stop signage should be installed at shared stops in the region. In many locations in Detroit and the inner suburban areas there are separate SMART and DDOT bus stop signs at the same bus stop. Integrated, common signage would educate customers on what service is provided at what stop and would show transit critics that the agencies work together for greater efficiency. This can also help alleviate some of the natural confusion that exists because of the limited stop nature of many SMART routes in the city and DDOT routes in the suburban areas.

Operations Communications Integration

Connections between different types of bus service can be more efficient with upgraded communication equipment in the vehicles. Fixed Route and Community Transit services should be more effectively integrated using upgraded communications to coordinate seamless transfers for customers. A communications upgrade will also allow community transit vehicles with Computer Aided Dispatch to more efficiently connect fixed route customers. While this is more of a medium term solution due to capital purchasing cycles, work needs to begin on this in the short term so that an integrated network will provide the opportunity for better connections between all bus services.

3.3.2 Service Coordination

Coordinate Paratransit Services

Integration of paratransit service should be a regional priority. One of the largest complaints in metropolitan areas with multiple transit service providers is a lack of coordination of paratransit services. This is true in Southeast Michigan, and was a common complaint shared at the Public Open Houses. Paratransit users do not have a common phone number to call, and they cannot currently coordinate trips between the two service areas. This is an activity that a central agency should manage. The possibility of a minimum cost savings of 10% while improving connections for customers should make this a priority for DDOT and SMART. This should be a first step towards eventual integration of the region's paratransit services.

Shared Transfers with the People Mover

Unified transit in Southeast Michigan - from a fare payment perspective - would be complete with the integration of the People Mover. Currently DTC does not accept DDOT/SMART transfers. In its position as a downtown circulator, the People Mover is in a prime position to become a key part of the transit system. In tight funding situations such as exist in Southeast Michigan, there are always concerns about such efforts. However, since both DTC and DDOT are part of the City of Detroit and funded by the City, it would seem that a way to cross allocate revenue for fare reimbursement between the agencies should be possible to achieve. The upcoming opening of the Rosa Parks Transit Center adjacent to the Michigan Avenue People Mover station provides the optimal time to integrate the People Mover with the Southeast Michigan bus system. The estimated cost for the fare equipment upgrade to allow shared transfers is \$10 million.

Inclusion of Opt Out Communities

Any new regional service should provide complete coverage of the region with appropriate transit services. In order for this to be the case, all communities in the three county region should be part of the regional system. Several large communities and townships have opted out of funding for SMART (Figure 2). Combined they represent almost 400,000 residents and numerous business and commercial areas that are not connected to regional public transit. Canton Township, Livonia, Plymouth, Plymouth Township in western Wayne County and Novi in Oakland County are developed enough that they can currently support fixed route service. Rochester Hills and Waterford Township in Oakland County are important residential and employment centers that should be connected to the region.

Improve Schedule Integration

Schedule integration can improve service for Southeast Michigan transit customers. When both SMART and DDOT upgraded their scheduling systems in 1999, both agencies purchased the same software for the purpose of coordinating schedules. However, the customization that was needed for the coordination to be effective was never completed. Both agencies informally coordinate schedules, but it would be more efficient for the process to be done directly by the scheduling software. By using the scheduling software, scheduling efficiencies could be better tuned to customers, especially in non peak hours to minimize wait times. An additional benefit of shared schedules information is that it could provide an opportunity to easily produce shared bus schedules.

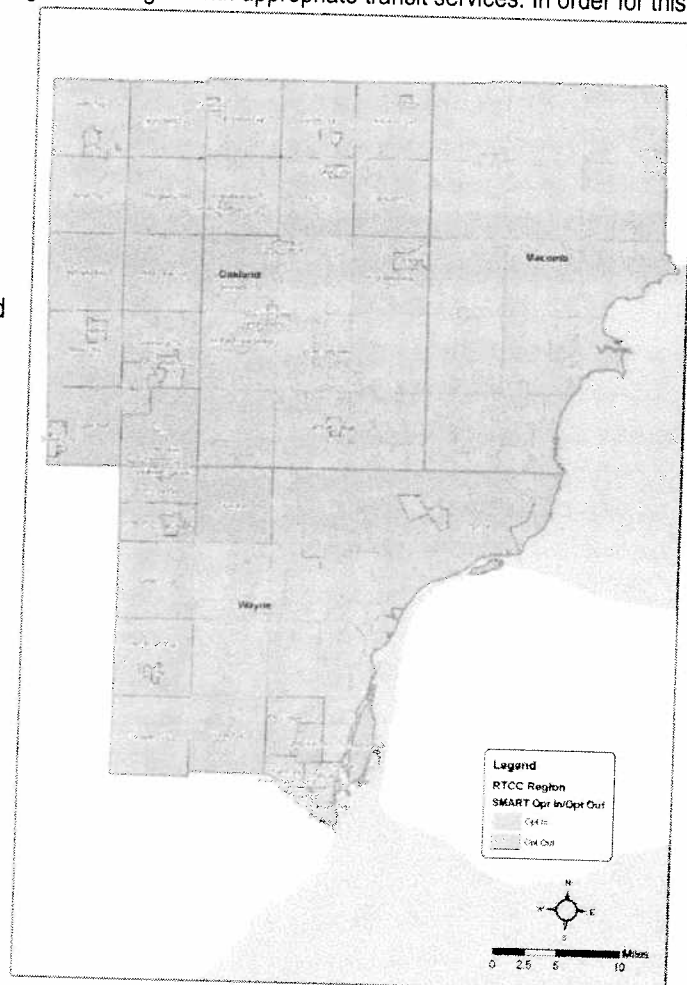


Figure 2 SMART Opt In/Opt Out Communities



4.0 Enhancement of Existing Services

Transit service must be improved to allow transit to become a true mobility alternative in Southeast Michigan. Current service provided by DTC, DDOT and SMART provide good coverage, but there is a need for more frequent service as well as some improved connections and amenities. Improving the existing system is an essential first step of this regional plan. The remainder of this section describes:

- Job Connectors – a short term solution for improved cross-regional travel
- Fixed Route Enhancements – describes service frequency improvements, route extensions and new routes
- Paratransit and Community Transit – describes the needed growth in these important services for lower density areas and for people with disabilities that cannot use fixed route services
- Bus Stop Enhancements – upgrading the passenger waiting environment is important to attract customers

4.1 Job Connectors

Job connectors are a short term solution to provide quick, inexpensive cross region travel. The proposed services would provide direct service between major job nodes that are currently served by four or more DDOT and SMART routes. Riders will be able to travel long distances quickly between SMART and DDOT hubs. The service will be provided with smaller connector buses with service scheduled to provide connections to existing fixed routes. While initially using private mall as hubs, over time the transit agencies should work towards dedicated facilities where customers can be provided upgraded amenities such as enclosed wait areas with rest rooms. This service would likely be replaced over time by rapid transit service should performance characteristics warrant the upgrade.

The proposed services are:

- Eastland Center – Rosa Parks Transit Center – Fairlane Town Center
- Eastland Center – Royal Oak Transit Center
- Southland Center – Fairlane Town Center
- Lakeside Center – Macomb Mall - Eastland Center
- Northland Center – Fairlane Town Center
- Lakeside Center – Royal Oak Transit Center
- Macomb Mall – Royal Oak Transit Center
- Northland Center - Royal Oak Transit Center - Oakland Mall

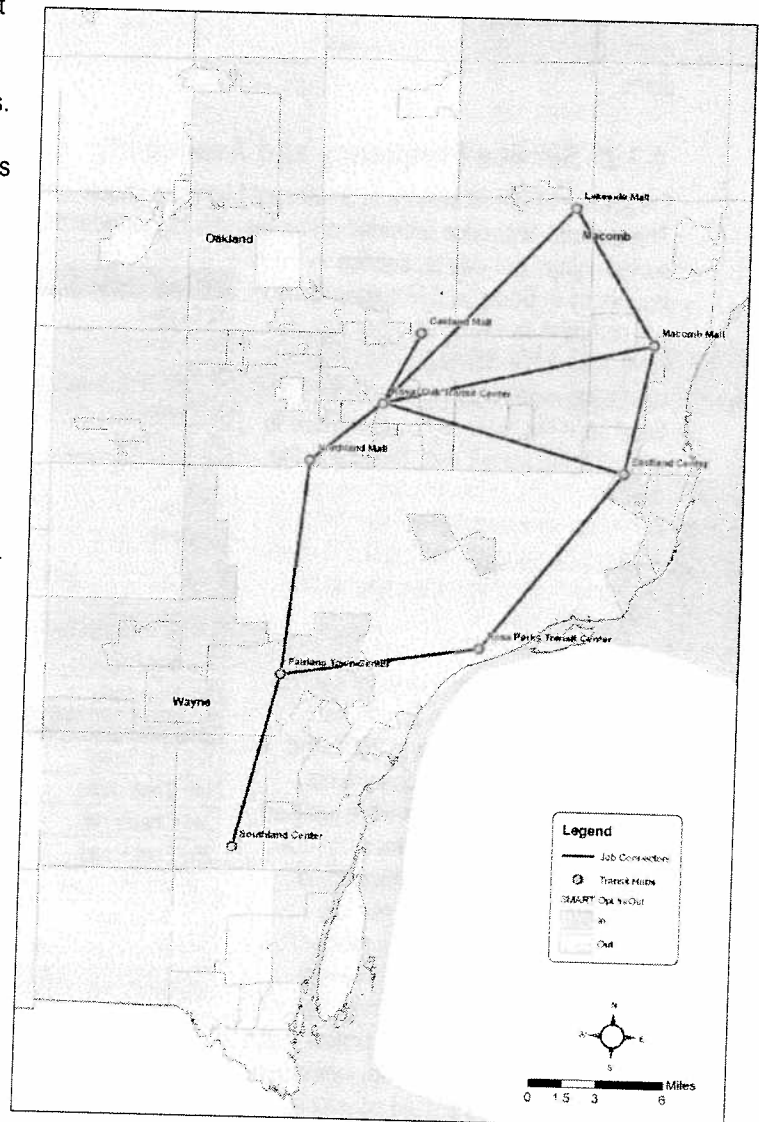


Figure 3 Proposed Job Connectors

4.2 Fixed Route Enhancements

DDOT and SMART have assessed current routes that should be extended and service increased in the near future. Both agencies are currently completing Five Year Service Plans that will provide more service in the future. The extensions and service frequency provide increased access to additional destinations such as commercial centers or other bus routes.

4.2.1 Near Term Route Extensions

Route extensions in the near term should create better connections between Detroit and suburban Detroit areas. This could be accomplished in the most cost efficient way by extending DDOT routes into SMART territory and SMART routes into DDOT territory. Southeast Oakland County and the City of Detroit have good transit connections. This is not the case in most parts of the region. While DDOT's Draft Five Year Service Plan 2008-2013 addresses this issue, some of the service proposed is duplicative of existing SMART service and has not been coordinated with SMART. Both agencies must cooperate and communicate on their Five Year Service plans.

Route	Extension to:
7 Cadillac-Harper	Cadieux & Kercheval
14 Crosstown	Michigan and Telegraph
18 Fenkell	Telegraph and Plymouth
19 Fort St	Fairlane Green
20 Grand Belt	Fairlane Towne Center
25 Jefferson	Cadieux & Kercheval
37 Michigan Ave.	Telegraph and Michigan
41 Schaefer	State Fair
43 Schoolcraft	West to Middlebelt
47 Tireman	Michigan and Telegraph
54 Wyoming	Northland Center
60 Evergreen	Northland Center

Table 1 Proposed DDOT Route Extensions

4.2.2 Service Frequency and Availability

Frequency of transit service in Southeast Michigan should be increased so that the maximum wait for a bus is 30 minutes. The amount of service provided on routes with higher ridership should also increase. Using general guidelines such as transit service hours per capita, service frequency in Southeast Michigan does not compare favorably to other top 25 urban regions in the U.S. The amount of service for a region the size of Southeast Michigan is not conducive to encouraging transit use. Service in the off-peak hours similarly warrants an increase, so that the maximum wait for a bus is 45 minutes. Off-peak service on higher ridership routes should be increased also.

Frequency, hours and days of service for many bus routes in Southeast Michigan were cut back in 2004 and 2005 due to budgetary constraints. Many of the adjustments were justified under productivity guidelines but now, some of the routes have increased ridership and need more service. Both increases will provide more options to customers and potential customers in the region. Consultation with SMART and DDOT indicates that proposed short term system increases on existing routes should consist of lower wait times; additional extra hours and full routing of weekend service (Table 2).

Lower Wait Times		
12 Conant	245 Cherry Hill	510 Van Dyke Local
36 Oakland	250 Ford Road	530 Schoenherr
37 Michigan	255 Ford Road Express	550 Garfield
39 Puritan	275 Telegraph	560 Gratiot Local
46 Southfield	280 Middlebelt South	565 Gratiot Limited
70 Crosstown Express	330 Grand River-Beech Daly	710 Nine Mile
71 Grand River Express	385 Orchard Lake	730 Ten Mile
72 Dexter Express	400 Southfield-Orchard Lake	740 Twelve Mile
73 Woodward Express	450 Woodward Local/Pontiac	760 Fourteen Mile
125 Fort Street	455 Woodward Local/Somerset	780 Fifteen Mile
135 Southshore Express	465 Auburn Hills Limited	805 Grand River Park & Ride
140 Southshore	494 Dequindre	830 Downriver Park & Ride
160 Downriver	495 John R	851 W. Bloomfield/Farm.P&R
Additional Hours		
125 Fort Street	330 Grand River-Beech Daly	560 Gratiot Local
140 Southshore	385 Orchard Lake	610 Kercheval/Harper
245 Cherry Hill	400 Southfield-Orchard Lake	710 Nine Mile
250 Ford Road	405 Northwestern Highway	730 Ten Mile
265 Warren Road	450 Woodward Local/Pontiac	740 Twelve Mile
275 Telegraph	495 John R	760 Fourteen Mile
280 Middlebelt South	510 Van Dyke Local	780 Fifteen Mile
Full Route Weekend Service		
140 Southshore	740 Twelve Mile	760 Fourteen Mile

Table 2 DDOT and SMART Recommended Service Increases

Transit service hours should be extended. In many parts of the region service is limited to a few hours of the day, usually around the peak periods. This restricts the use of transit customers who work or wish to travel outside of the peak periods. Often, this limits option for riders who are second shift and service workers.

It is also recommended that the frequency of the People Mover service increase to provide better circulation in Downtown Detroit. With the opening of the Rosa Parks Transit Center, adjacent to the Michigan Avenue People Mover station, the People Mover is positioned to provide direct connections between many routes and the downtown area it serves. This can result in greater demand for more service assuming transfers and frequency are improved.

4.2.3 New Routes

Fixed route service is recommended to be expanded in areas that have been assessed as being underserved based on the Transit Potential Index analysis that was performed for this project. Several proposed new routes are in the urbanized core of the three county region. DDOT and SMART currently have proposed new routes (Table 3) which address some of these areas. Since Southeast Michigan has very good coverage, many of new routes in the region should provide service that produces better connections between the DDOT and SMART areas, allowing customers to board anywhere in both service areas and provide service between major employment and commercial areas. Any additional new routes near the City of Detroit should connect the City with the suburban nodes of activity.

DDOT	SMART
Downtown-Airport	Dix-Toledo
Eight Mile Express	Michigan Av. Limited
Everygreen Exprss	Coolidge
Fort Express	Mound Rd.
Greenfield Express	North Troy-Sterling Hts Park and Ride
Jefferson Express	
Michigan Ave. Express	
Seven Mile Express	
West Warren Express	

Table 3 Proposed New DDOT and SMART Routes

Many lower density areas of the Southeast Michigan region are currently served by flexible and demand response service. Residential and employment densities and trends identify several areas that can support scheduled fixed route service. These areas include Sterling Heights; Southgate-Taylor Area; Downriver (south of Eureka Rd.); Warren and Center Line. Service in these areas should be upgraded concurrently with the inclusion of opt out communities. Both changes will change demand and rider patterns in the region. *Additional study to determine the details of the best way to reintroduce service to these areas should be undertaken.*

4.3 Paratransit Service

Paratransit is the service that customers who because of their disability, cannot use fixed route bus services. Customers call in advance to arrange a ride between a starting point and destination. Much of this service is required to be in areas surrounding fixed route services (3/4 mile on either side of the route). Currently SMART and DDOT provide this service in each of their operating areas. However in some cases more than 24 hours advance reservation is required. This needs to be reduced to a maximum of 24 hours. These separate paratransit services should be combined and operated by one provider. Currently customers who travel from the suburban Detroit to the City of Detroit must arrange trips on both services and transfer. This is difficult at best. Since many communities in Western Wayne have opted out of SMART, SMART's paratransit service area is disconnected and service is provided in two physically different regions, north of 8 Mile and south of Joy Rd. This disconnected service area can be made more efficient by coordinating the DDOT and SMART paratransit services. This way, two overlapping zones can be setup that mirror Southeast Michigan residents' true travel patterns. Regional riders would be able to travel in their areas easily (e.g. Royal Oak to New City or Detroit to Dearborn). The coordination of new regional paratransit service should be spearheaded by and expanded RTCC or a regional transit authority. These new efficiencies will help minimize the anticipated capital and operating growth in future paratransit service.

Requests of paratransit riders by both providers is increasing. Due to the large projected growth in the aging population, it is expected that ADA/Paratransit service will need to increase by 50% to accommodate this growth. The over 65 population of Southeast Michigan is projected to grow from 12% of the region to over 22% by 2030. This is a higher percentage increase than is projected in most other regions.

4.4 Community Transit

Low density suburban and rural areas use public transit that is tailored for their needs. These areas do not have the density to support fixed-route bus service. SMART currently serves these communities with Connector and Community Partnership Program service. This plan estimates that these services will have to grow by 50% to accommodate increased population and transit usage in these areas over time. Additionally, service will need to grow to allow these community transit services to provide connections to the regional transit system rather than only providing access within a community. These services are important components of a regional system and should be enhanced to provide "first mile/last mile" services for regional trips.

4.5 Bus Stop Enhancements

The waiting environment for passengers must be improved to attract and retain customers. Currently there are many locations where a bus stop is identified by a sign pole along side of a road, often in an area that is not paved or connected to sidewalks. Transit customers must be able to safely and conveniently access bus stops, with a standard set of basic amenities. The basic bus stop throughout the region should have sidewalk access. Lighted shelters with a system map and schedule information should be installed throughout the region. At certain key location the shelters should include "next bus" information which provides real time information on the location of the next bus serving that bus stop. A minimum of one hundred locations should be installed in the first five years with a goal of 400 for each five year period after 2015. These enhanced stops will be implemented in a systematic manner throughout the region, using a set of guidelines and in concert with streetscaping or planned roadway projects.



Figure 4 Bus Shelter in Chicago

5.0 High Capacity Transit Modes

In addition to the enhancements to existing services discussed in the prior section, there are a number of corridors in the Southeast Michigan region that have characteristics that would be appropriate for the introduction of higher capacity transit services. The characteristics that identify these corridors include:

- High travel flows through the corridor
- Development patterns that are supportive of transit and could benefit from additional development potential
- Key destinations along or near the corridor
- The nature of the market that can use transit

There are a number of different transit modes that may be applied into high capacity corridors. This section provides a description of the mode, provides a visual image and describes the cost characteristics of the mode. The next section of the report identifies the specific corridors and modes that are recommended in this plan.



Figure 5 Upgraded Bus Stop in Kansas City

5.1 Arterial Rapid Transit (ART)

Arterial Rapid Transit corridors are areas where there are certain aspects of Bus Rapid Transit (BRT), such as traffic signal priority (the provision of extra green time for bus in response to an automatically generated call from the bus to a signal it is approaching), wide stop spacing ($\frac{1}{2}$ to one mile or more), enhanced stops with shelters that provide more protection and next bus information, specific branding of buses and stops. Using the separate parts of ART, enhancements throughout the region can be made quickly.

ART is proposed on priority fixed routes throughout the region. ART will provide:

- Upgraded bus stops that provide more protection and next bus information
- Specific marketing and branding strategies for the ART service
- Traffic signal priority to help speed buses
- Hybrid low floor buses with bike racks



Figure 6 Metro Rapid Branded Bus - Los Angeles

Implementation of ART is a relatively low cost, quick solution to lower the travel time of customers. For example, in Los Angeles, the LA Metro Rapid service reduced the travel time on some routes by up to 25% and increased ridership by 30%. ART can be implemented in a programmatic way or in an incremental fashion. It should be possible to implement ART services outside of the Federal New Starts funding process (which can take from 7-12 years to implement a project) by tapping other sources of funding such as Bus and Bus Discretionary funding, formula capital funding and other specialized sources. Roadway improvements related to the projects (such as intersection or signal improvements) can be funded through roadway or flexible funding sources. Use of low-floor and hybrid diesel/electric or fuel cell powered vehicles should open up new funding sources not previously available.

Capital costs of \$300,000-\$450,000 per mile include traffic signal priority, enhanced bus stops with upgrades shelters with amenities and branding.

Hybrid low floor buses with comfortable seating and options such as wi-fi currently cost from \$500,000 - \$600,000. The cost of regular transit bus averages \$275,000. The cost to operating ART is anticipated to be \$127 per vehicle hour.

5.2 Bus Rapid Transit (BRT)

Bus Rapid Transit vehicles are not your typical transit bus. They have an appearance closer to that of a train on rubber tires. BRT is a bus operating strategy that uses reserved transitways or lanes, express operations, special vehicles, enhanced passenger facilities, and other means for buses to emulate the reliability and convenience of rail transit. The goal of using BRT technology is to combine the flexibility of buses with the speed and reliability of rail transit at a lower cost.

BRT is used in corridors that range from 1,000 trips per day to 40,000 trips per day. BRT works best in an exclusive right of way where buses can operate similar to trains, averaging speeds close to 30 mph. The most capital cost efficient BRT systems, integrate bus service into a right of way physically separated from traffic.

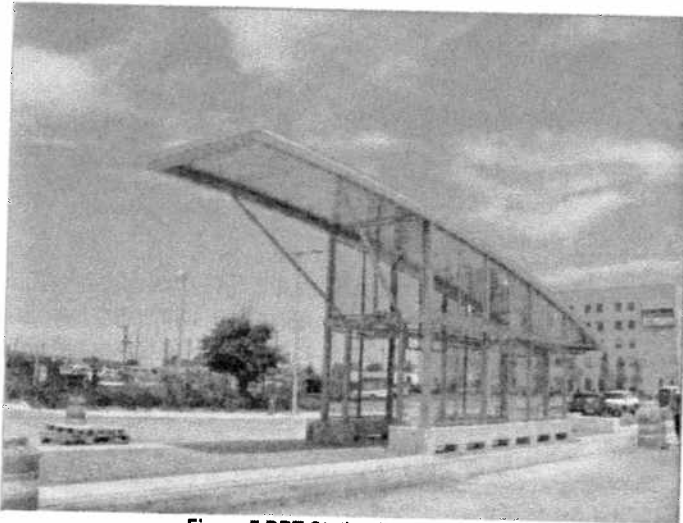


Figure 7 BRT Station in Cleveland

BRT proposed in this report refers to the all aspects of ART with the addition of priority treatment, such as dedicated lanes in sections, full stations that provide prepaid boarding and longer articulated buses with multiple entry/exit doors.

The general capital costs for BRT range from \$9.1 million - \$21 million per mile. There is an anticipated 35% savings in corridors that are upgraded from ART to BRT. ART buses will be redistributed to new or existing ART routes and much of the infrastructure (traffic signal priority) is in place.

BRT vehicles which are extended multiple door entry/exit buses cost \$1 million - \$1.2 million each. They will have all the amenities of ART buses. The operating cost of BRT is slightly higher at \$135 per vehicle hour due to the larger buses.



Figure 8 BRT Station in Eugene, Oregon

5.3 Light Rail Transit (LRT)

Light Rail Transit is an electrically powered rail passenger system used for urban transportation, typically used on shorter routes than those covered by commuter rail. LRT typically operates at-grade. Similar to BRT, LRT in an exclusive right of way can average speed of 30 mph.

LRT vehicles are more maneuverable than traditional railroad equipment. The trains are bi-directional vehicles, operated by one driver. Customers prepay before they board and wait in stations just like BRT stations.

There are two types of LRT currently used in the U.S.: Modern Streetcar and Light Rail vehicles.



Figure 9 Modern Streetcar in Portland

5.3.1 Modern Streetcars

Modern Streetcars are designed to travel in congested urban areas and can operate and are light and maneuverable. They are used in areas where the station spacing is close together and they have fast acceleration that minimizes the effect that short station spacing has on travel times. The size and design of streetcars enable them to maneuver tighter turns and operate in both the median and curb lane of streets.

Capital costs of modern street cars range from \$16 million - \$29 million per mile. The lower end of the cost range include minimal stations with a shelter and ticket machine. The higher range includes a station, typically integrated into the curb side of a street. Another major difference in the costs is the depth of the roadbed to support the weight of modern streetcars. Heavier vehicles, with weights close to light rail vehicles, will need more subsurface support which increases the cost per mile.

The cost of modern streetcars is \$3 - \$3.5 million per three car connected train. The operating costs of \$173 per vehicle hour covers all parts of the operation including electricity and station maintenance.



Figure 10 Modern Streetcar in Portland

5.3.2 Light Rail Transit Vehicles

Light rail vehicles are larger trains designed to operate in mixed traffic and on dedicated right of way. They are capable of high speed (55 mph) and being connected to travel in multiple units. Light rail vehicles have a high passenger capacity, similar to heavy rail (subway railcars). Stations for these systems are usually spaced at one mile (or more) intervals to allow the vehicles to reach higher speeds, though they can be spaced closer in more densely developed areas.



Figure 11 LRT Vehicle in Houston

Construction costs for these systems range from \$59 million - \$69 million per mile. The bulk of the cost is related to the roadbed infrastructure. Vehicles costs range from \$4 million - \$5 million for each two car pair. The cars have a higher capacity for passengers than the modern streetcar. Operating light rail vehicles average \$217 per vehicle hour with maintenance of more infrastructure driving the higher costs.

Both modern street cars and light rail vehicles can travel on the same tracks as long as the stations are designed at the same height and the track bed substructure is designed to accommodate the heavier weight of the light rail vehicle.

5.4 Commuter Rail

Commuter Rail is rail passenger service, operated on tracks shared with freight traffic. Commuter rail is oriented to the peak period and typically serves suburban commuters to downtown employment areas. Commuter rail typically provides at least several inbound and outbound weekday trains, focused on work trips. Regional rail passenger service, serving multiple trip purposes, is normally operated with trips spaced through the day, with service every day.

Capital costs for commuter rail, \$1.7 million - \$3.3 million per mile, range widely because of the wider range of conditions that are encountered in introducing commuter rail. Higher per mile costs are attributable to improvements the freight railroads request before allowing passenger service on their tracks. Often the costs, for things such as a second track or new signaling, can put projected project costs out of reach. Vehicle costs for commuter rail also have a large range. This is due to their being a market for used commuter railroad equipment.

Passenger operators in some regions have consistent streams of capital funding and retire equipment that can be refurbished. Vehicle cost for one train (one engine and five passenger cars range used from \$2.5 million - \$3.5 million and new from \$7 million - \$15 million. Operating costs of \$476 per vehicle hour for commuter rail are high due to trackage use fees that transit providers pay the railroads.



Figure 12 Commuter Rail - Chicago

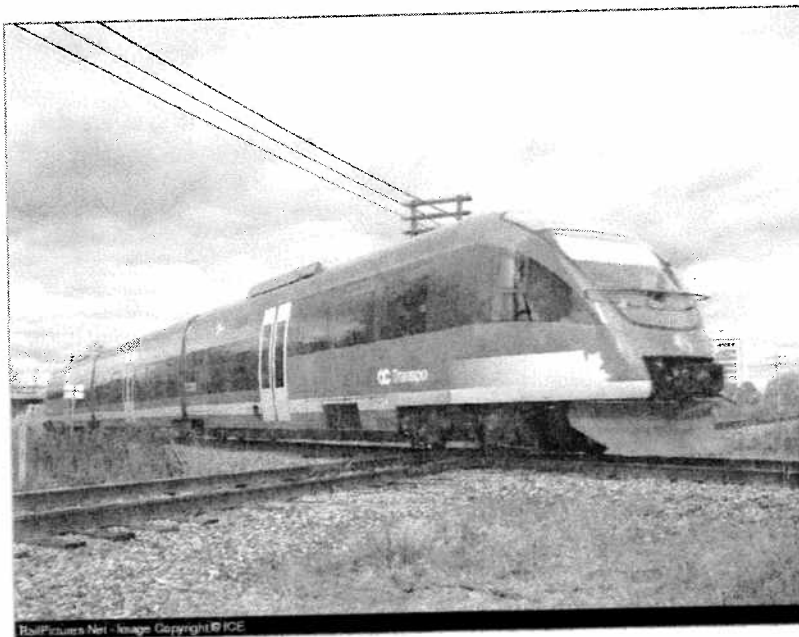


Figure 13 Diesel Multiple Unit in Ottawa, Canada

6.0 Regional Agency Organizational Recommendations

As consideration of a recommended network are developed, the organizational structure is an important element to have in place. Today there are three providers of transit service. All three struggle for adequate funding and there are concerns about the level of coordination of these three providers. This plan calls for a significant increase in services for the Southeast Michigan region. Along with the recommendation for service, is a recommendation to create a new organization with powers to plan, fund and operate a regional transit network. At the planning level, there are three basic elements that are considered in this section.

- Recommended powers of the regional organization
- Organizational structure
- Phased implementation

6.1 Powers of a Regional Transit Organization

The following powers are recommended for a regional transportation organization to service Southeast Michigan: With these powers, a regional organization should be able to plan, fund, build and operate regional transit service. Within these powers, there is a very broad range of how these powers can be applied. The details of how they are applied will depend on many local factors:

- Identify, obtain and manage funding
- Construct capital projects
- Develop and implement service expansions.
- Ability to create or respond to economic development opportunities
- Coordinate or unify current and future transit services in the region
- Contract for management and operation of transit services with current providers or private
- Plan for capital and operational changes to transit
- Ability to achieve zoning approval for bus stops and passenger shelters regionwide
- Implement or coordinate services through allocation of funds, regulation of geographic and modal service areas, and competition for jurisdiction over new services

6.2 Organizational Structure

Establishment of a new organization has many aspects to set in place. There are three key items considered here that have significant ramifications for the ability of an organization to function and meet the needs of the region.

- Geographic area
- Board appointments
- Board size

6.2.1 Geographic Area

It is recommended that the geographic area for the regional transit organization consist of the 3 Southeast Michigan counties – Wayne, Macomb and Oakland. Because of the nature of the travel patterns within this region, it is also recommended that the organization be established without 'opt out' options. The existence of opt out communities has clearly left holes in the transit network in the region today. At the same time, the establishment of a mechanism in the enabling legislation to allow other surrounding counties to join through acceptable administrative agreements is encouraged. Inclusion of Washtenaw, Monroe and St. Clair counties should be considered.

6.2.2 Board Appointment

There are many different ways for Boards of Directors to be appointed. There are several key characteristics that should be achieved by any approach. It is essential that any method used for Board appointments achieve a balanced Board membership as well as provide for the representation of the main governmental entities.

Some of the options that can be identified include:

- Direct appointment by local counties/cities in the region
- Nominations by local counties / cities in the region with appointment by Governor
- Straight appointment by Governor
- Elected Board
- Ex Officio participation by Michigan DOT or other government agencies

Examples of all of these options are present in the transit industry. Each region identifies an approach that meets the needs of the specific political and institutional structure within their own region. In addition to the examples described, some blends of these options also exist. A fairly common blend is to have an appointed Board, with direct appointments as well as gubernatorial appointments and ex-officio representation, often by the state DOT.

6.2.3 Board Size

The transit industry sees a large range in Board sizes. It is recommended that the regional transit organization in Southeast Michigan seek to establish a Board with between 5 and 11 members. This provides the opportunity for a Board to be widely representative of the region as well as to attract a good mix of skills and experiences to provide policy leadership for the new organization.

6.3 Phased Implementation

Phased implementation of the regional transit organization is essential from both practical and pragmatic perspectives. DDOT, DTC and SMART are all limited by practical concerns of funding adequacy as well as geographical constraints. The services provided by these organizations cannot be replaced overnight. In some regions, organizations function well by combining regional services with local services. The powers recommended for the regional organization provide for the ability of the new entity to function anywhere from being the sole operator and funder of transit in the region to blending the skills and resources of the new organization with those of the existing providers. The following steps are recommended for the evolution of the regional transit organization in Southeast Michigan.

- Build organizational structure and capacity
- Commence implementation planning for ART and corridors
- Determine best way to coordinate existing providers
 - Continuity of service
 - Funding streams
 - Accelerate enhancements with regional consistency
- Full implementation
 - Single organization - RTA
 - Unified agency
 - Coordinated operations under regional guidance

7.0 Introducing Rapid Transit Corridors

Rapid transit service provides fast, frequent, comfortable transit service in corridors that have high transit use - with the potential for yet higher transit usage if a higher quality or faster service were in place. Rapid transit service provides amenities such as stations and vehicles with more amenities than a normal transit bus. Station spacing of ½ mile to 1 mile or more allows higher speeds and faster travel times. Station spacing of ¼ mile is common for Light Rail/Streetcar operations within a downtown district. Rapid transit systems properly integrated with the existing transit system, allow transit agencies to reallocate equipment and service to the wider region once a rapid transit corridor is introduced. As described in the prior section, rapid transit systems do have a high initial capital cost, which with Federal funding can be matched with state and local investments to build. Local dedicated funding is also needed to fund the on-going operations of these services.

Implementation of these services often has a long lead time. Combine the planning horizon with the amount of funding that is being sought, and it becomes clear that a phased implementation of service is the appropriate way to pursue implementation of rapid transit corridors in the Southeast Michigan region.

The proposed Regional Transit Network will grow to accommodate the needs and support economic development activity in Southeast Michigan. The network introduces rapid transit corridors to enhanced existing transit services. As rapid transit corridors are implemented, the services in the existing systems will be restructured to provide enhanced access to the rapid transit corridor for the quickest most efficient trip for residents. The ultimate network - consisting of enhanced existing services as well as new rapid transit corridors, will enable people to travel to across the region and commute to their jobs on services that become more time competitive with the automobile.

7.1 Phasing of Service

The development of a Long Range Plan for transit services must be implemented over time. The ability to implement depends on funding available. With the need for a region to match scarce Federal capital support dollar for dollar means that there needs to be local funding in place to match or bond projects. Additionally, a Long Range Plan seeks to grow the market for transit services over time. Phasing transit in new modes is a cost effective way that will allow transit to grow steadily.

The basis of the Comprehensive Regional Transit System Plan is to:

- Phase in rapid transit corridors over time, and
- Use Arterial Rapid Transit (ART) as the backbone/catalyst of the system

Corridors will move to a higher level of service *if and only if* ridership warrants the improvement and density characteristics will be able to leverage the needed Federal funds for capital construction. By building on a growing infrastructure the costs of expansion of services is incremental. The projected cost savings of using this strategy is 35%.

The network is laid out in "snapshots":

- Short Term Implementation 2009-2012,
- 2012-2015,
- 2016-2020,
- 2021-2025, and
- 2026-2035

In the first five years, existing service will be expanded with fixed route extensions, increases in service for both fixed routes and Community Transit, addition of new routes and the reintroduction of service to communities that have opted out. With

the introduction of enhanced bus services such as ART, Job Connectors and BRT the region will increase high quality transit service in a financially viable manner.

Increased bus service will help grow a transit constituency. This improved service will translate into a broader constituency to advocate for expanded rapid transit services. In short, success breeds more success. Introduction of LRT service on Woodward in the first ten years will be a test to prove LRT viability in Southeast Michigan. Assuming that LRT is viable, as the region's characteristics suggest, rapid transit service will be able to grow in the region and bus service will adjust to provide the best connections.

Following this pattern, this plan lays out a 27 year scenario where transit will continue to grow and provide the inner three counties of Southeast Michigan with a regional transit system and 6 counties with a commuter rail system.

7.2 Short Term Implementation 2009 - 2012

The two capital intensive projects, LRT on Woodward from Jefferson to Grand Boulevard and Commuter Rail from New Center to Ann Arbor (with a station at Detroit Metropolitan Airport) are currently in the planning phases and are expected to be ready for implementation by 2012. ART services can quickly be started on Woodward, Gratiot, Warren, Michigan, M-59 and Telegraph Rd. During this short term time period, intensive planning efforts must be underway for the services expected to be implemented in the 2013-2015 time period, particularly for the BRT on Gratiot and the LRT extension on Woodward from Grand Boulevard to 11 Mile Road.

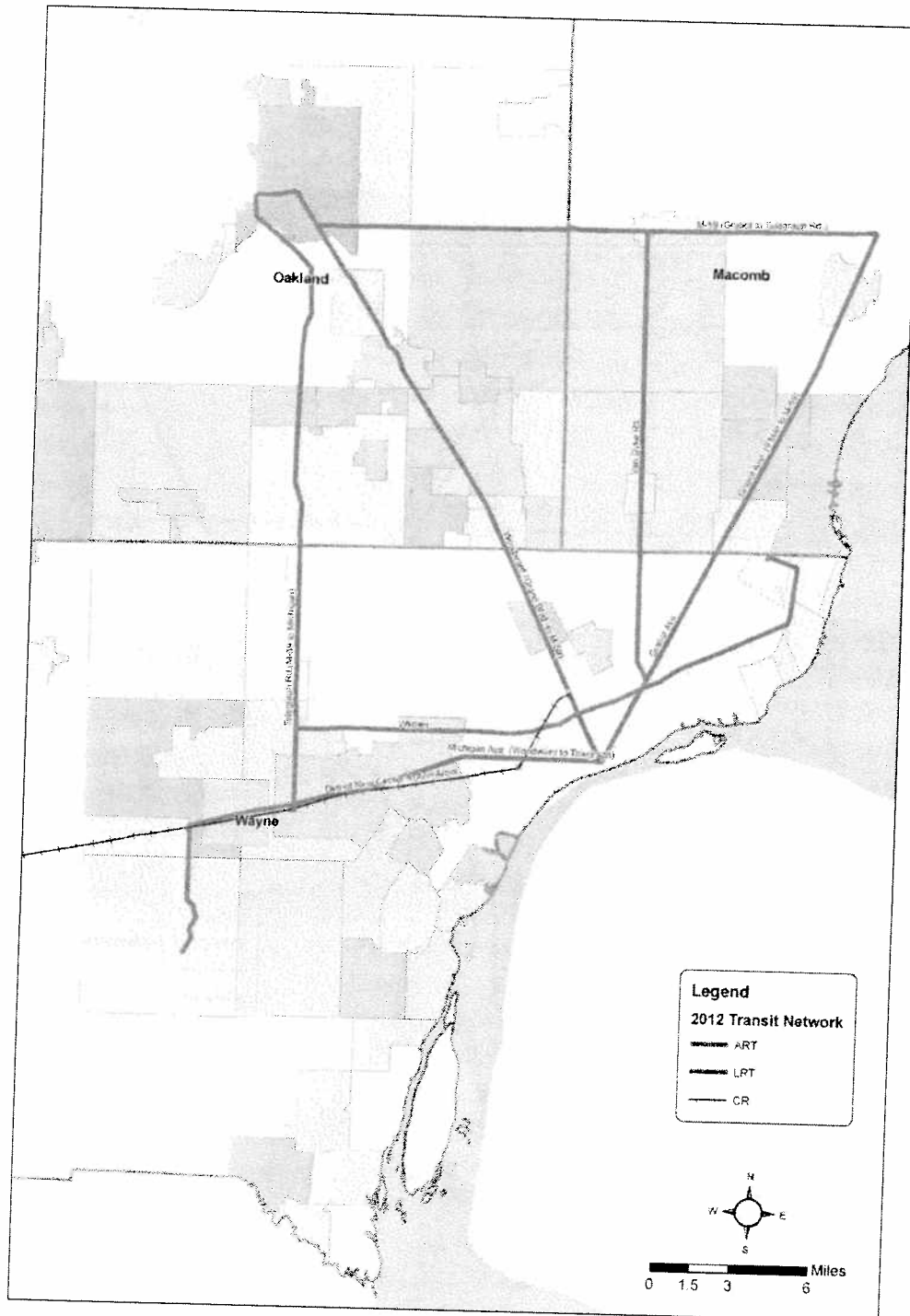


Figure 14 2012 – Proposed Corridor Service

7.3 Proposed Rapid Transit Corridors 2013-2015

In 2015, the proposed network contains adds regional commuter rail service from Detroit to Pontiac. LRT on Woodward is extended to 11 Mile Rd. and complimented by BRT on Gratiot/M-59. ART is added to Big Beaver-Metro Parkway, 8 Mile Road, Grand River, Jefferson St./Harper Ave. and Fort St. to serve Downriver. During this period, intensive planning will take place to determine if some routes or segments are appropriate to shift to Bus Rapid Transit or Light Rail Transit in the next time period.

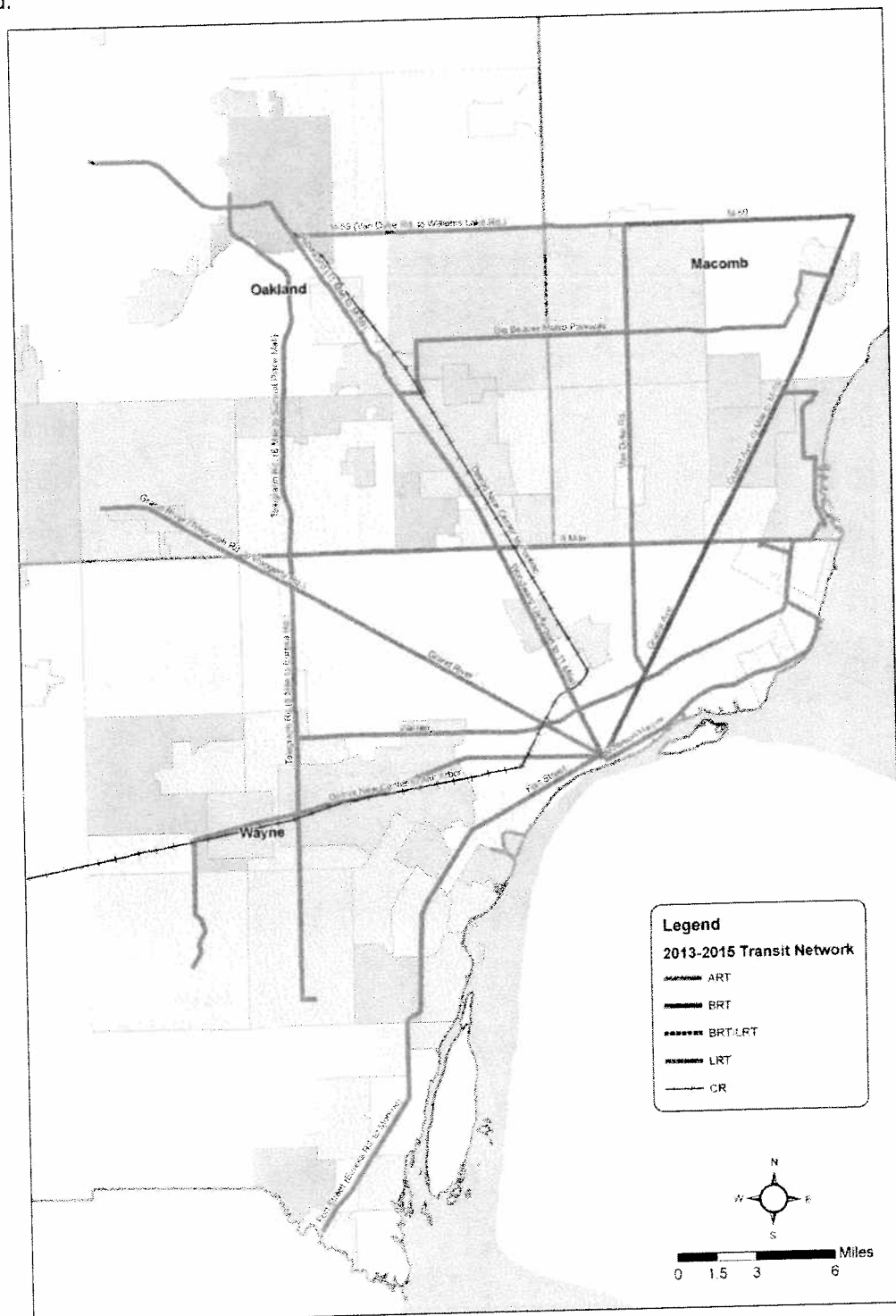


Figure 15 Proposed Corridor Service 2015

7.4 Proposed Rapid Transit Corridors 2016-2020

By 2020 it is anticipated that with the increase in ridership, some routes previously served by ART will convert to BRT and some ART or BRT routes may convert to LRT. These routes will move to BRT or LRT "if and only if" the intensive planning process shows that conditions warrant the investment in the modal upgrade. As a result, some corridors have a dual designation on the map below. New ART corridors are proposed to be added to 7 Mile, 9 Mile, Greenfield, Haggerty/Williams Lake Road and Eureka Road to fill in gaps in the region and expand high quality transit service to the region. Regional service would be expanded with the additional of commuter rail from Detroit to Monroe and Port Huron. Commuter service to these communities is projected in this time period because both corridors have significant freight traffic that will require capital intensive solutions to allow implementation.

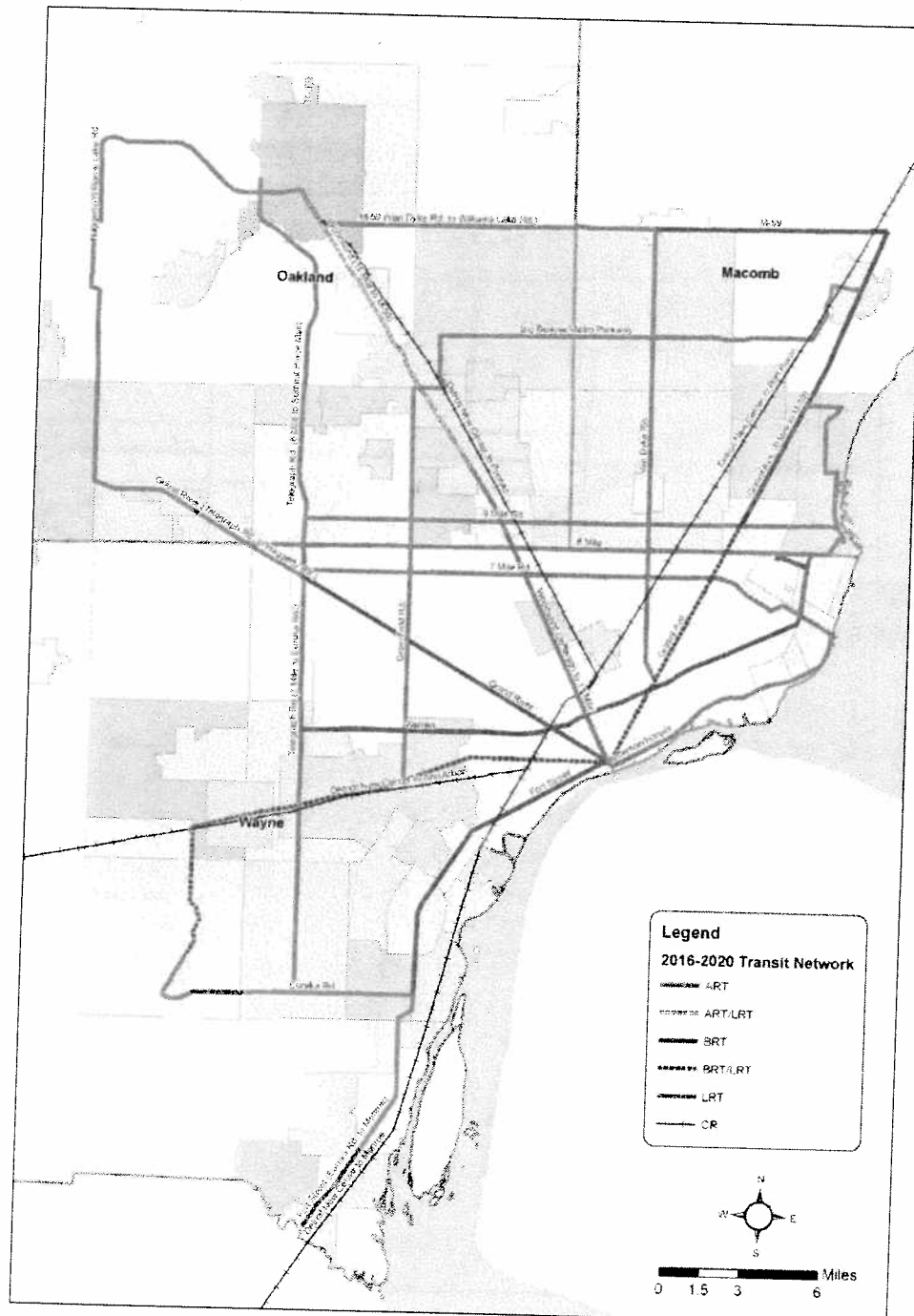


Figure 16 Proposed Corridor Service 2020

7.5 Proposed Rapid Transit Corridors 2021-2025

In a climate of continued use, the system is expected to continue to expand and upgrade in 2025. The network is laid out with the proper mode addressing need. If ridership growth continues parts of Gratiot and M-59 will convert from BRT to LRT. The last ART route is added along Twelve Mile Road through Macomb and Oakland Counties.

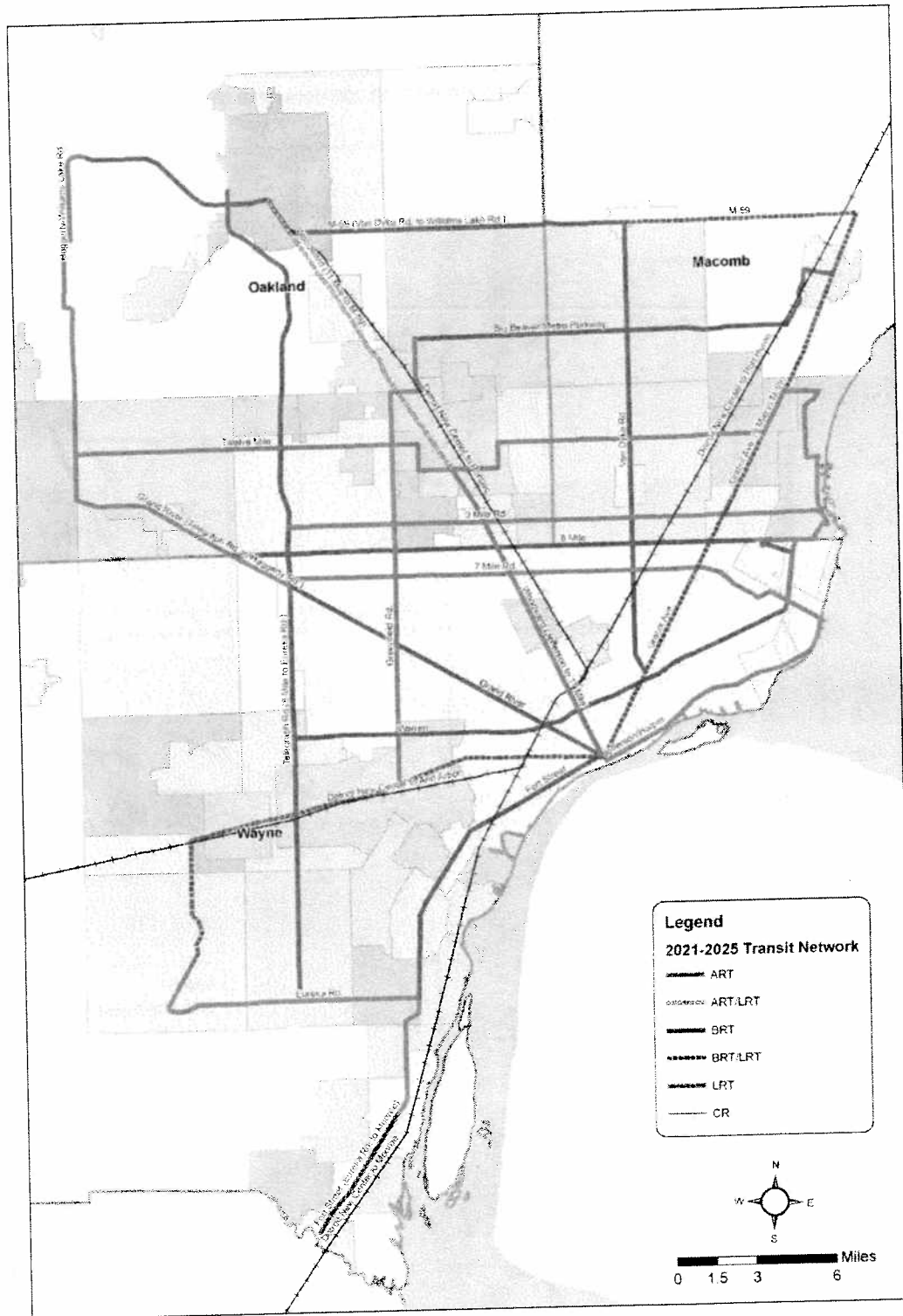


Figure 17 Proposed Corridor Service 2025

7.6 Proposed Regional Transit System 2026-2035

In 2035, a completed system will balance Community Transit, expanded bus service, ART, BRT, Commuter Rail and LRT to provide a comprehensive system for the residents of Southeast Michigan.

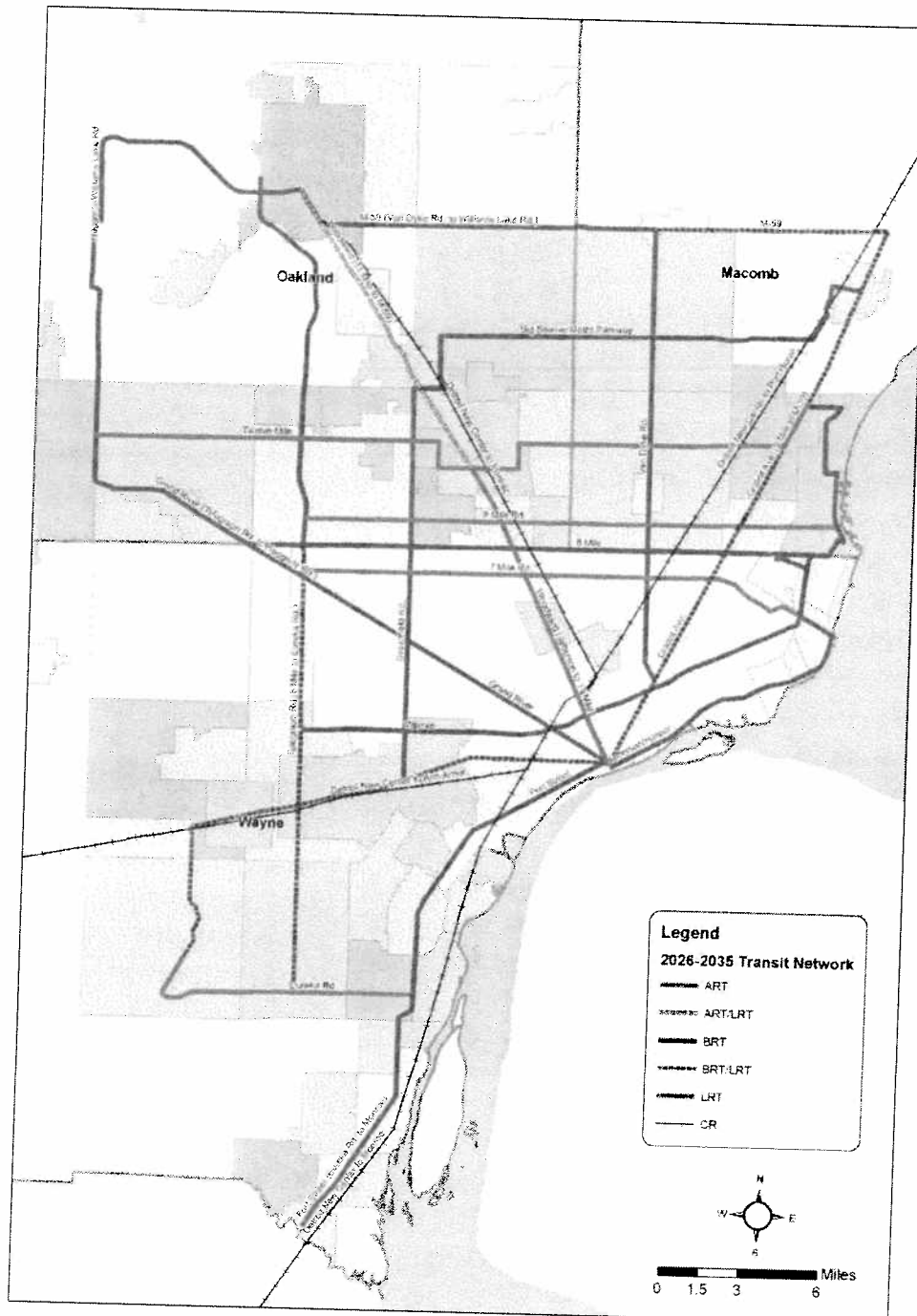


Figure 18 Proposed Corridor Service 2035

There are several other commuter rail options to the Regional Transit System that may merit further study. The Detroit-Ann Arbor commuter rail line could branch off and terminate at Cobo Hall. An option of using the Dequindre Cut to provide service to Downtown Detroit from Pontiac was considered but rejected due to the high cost of restoring the corridor. Service using rail corridors could also be evaluated that serve Southwest Macomb (Warren, Sterling Heights and Utica), Northwestern Wayne (Livonia, Milford, Novi and Plymouth).



8.0 Mobility Benefits of Regional Transit Network

Expanded regional transit brings increased mobility, allowing the residents of Southeast Michigan the choice to take transit. The proposed Regional Transit Network, including enhancements to existing services and the introduction of new rapid transit corridors, will provide the residents of Southeast Michigan better travel options and more frequent service.

A well planned modern transit system integrates with other modes of transit. The most efficient trip will use the most efficient mode, which includes, walking, cycling and driving. Integrating transit with a combination of these different types of modes increases the quality of life of residents, specifically young adults, which is a goal of the plan.

8.1 Transit Travel Time Savings

The time saved and new trips that can be accomplished on transit are key ways to highlight the benefits of the proposed Regional Transit Network. An analysis of the mobility benefits associated with an improved transit network in Southeast Michigan. The analysis quantified the benefits, on a trip-by-trip basis, that are realized as a result of the expanded network. The mobility benefits calculated are quite substantial and appear to position transit travel to be much more competitive with the automobile as the network grows and expands.

An approach was designed to assessing the mobility benefits that would address the following types of trips: work, entertainment, cultural, educational, medical and shopping. The travel times assessed covered the all time periods: peak, mid-day, early AM, night and weekends. Looking at different times and types of trips, the assessment covers a wide variety of riders including service industry and second shift workers.

Thirty trips (origin to destination) from across the region were assessed. The trips evaluated were chosen to insure that the employment areas, major entertainment, culture and educational activities were covered been being considered. The transit travel times were calculated in both directions simulating a person's true round trip travel patterns.

Time of Trip	2008-2015	2008-2035
Early AM	39%	64%
Peak	18%	27%
Mid-day	14%	29%
Night	19%	39%
Weekend	43%	49%

Table 4 Average Time Savings by Time of Day
*Some trips are in multiple categories

Trip times were calculated for 2008, which is the baseline. Calculations of transit travel time were made for the same trip taking place on the network that is proposed to be in place in 2015 and third calculation was made using the 2035 recommended transit network.

Special attention was paid to identify and assess typical trips for elderly. Ten of the transit round trips calculated were designed to model typical trips taken by elderly travelers by selecting key typical origins and destinations as well as times concurrent to senior trips. The elderly trips include the use of Community Transit which is targeted towards their use.

The 2008 baseline transit travel times were determined by using the online trip planners for DDOT and SMART. The 2015 and 2035 trips were determined by using the projected service in place of the network at that time with service frequencies based on the mode standard adjusted for the projected corridor use. For the purposes of these calculations, traffic congestion in 2015 and 2030 is assumed to be the same as 2008 (a conservative estimating assumption).

Category	2008-2015	2008-2035
Cultural	7%	27%
Education	22%	36%
Elderly	9%	21%
Entertainment	32%	47%
Medical	13%	32%
Work	35%	43%

Table 5 Average Time Savings for Each Category*
*Some trips are in multiple categories

Using transit on the sampled trips in 2008 varied from extremely convenient to not possible for four of the trips. Comparing 2008 to using the proposed network in 2015, the average cut in trip time is 18%. One of the four trips unavailable to transit users in 2008 can be traversed using the 2015 network. Comparing 2008 to the 2035 proposed transit network, the average reduction in transit trip time is calculated to be 32%.

The total time savings for all 30 trips 2008-2015: 1085 minutes and for 2008-2035: 1722 minutes. On average, transit users will save 18 minutes in trips from 2008-2015 and 29 minutes time on trips comparing 2008 and 2035. These times do not

take into consideration the environmental benefits such as less pollution, less fuel used and intangibles such relaxing while riding versus driving in congested traffic. Two trips reviewed will save more than 90 minutes each way, while seven trips will save a time of less than 20 minutes.

8.2 ADA & Elder Mobility

The proposed Regional Transit System will enhance the mobility of all residents and workers in Southeast Michigan. However, it is important to focus on the specific mobility improvements for the disabled and the elderly as these groups are key targets for improved services. The use of transit by the elderly and disabled community was a focus from the outset of this project. Increasing mobility for the disabled and elderly is not just about increasing service. Improving facilities to better accommodate the disabled and elderly is useful to increase ridership and lower costs. This plan proposes that all vehicles and new facilities be accessible which will be a benefit to both groups. By working with communities to make sure that continuous sidewalks connect to shelters, the elderly and disabled will be able to access and choose to take fixed route transit. Low Floor buses and light rail vehicles will allow both communities to enjoy the advantages that the Proposed Regional Transit System will provide.

Extensive concerns were raised relating to the ability to use ADA service *between* SMART and DDOT service areas. With the need to reserve services on both providers to complete a trip that can be as short as a couple of miles, the system currently causes undue difficulty for ADA service that 'crosses the boundary' between DDOT and SMART service. The recommendation that SMART and DDOT ADA service be coordinated initially and eventually combined will solve this major issue in the region. Curb-to-curb and door-to-door service will need to be expanded. It will be a major step towards increasing the mobility of the disabled. Trips that are difficult to make, if at all, will be possible.

Access for the disabled to work, education, culture, entertainment will be enhanced by this plan. The provision of more fixed route service that covers the area, with more service provided, makes most major destinations within the current SMART region accessible without paratransit service. Schedules must be made more available by a variety of methods; posted in bus shelters, available on-line, available via 1-800 phone numbers and posted in Sunday papers.

Addressing the disabled and elderly who cannot use fixed route services, this plan recommends that paratransit service increase by 50%. This is to accommodate the projected 50% growth in the elderly population in the next 25 years, who are a major consumer of paratransit services. In combination with savings from a combined DDOT-SMART paratransit service, the disabled will be provided with more service so the number of trips can increase and the wait times for service will decrease.

SMART and DDOT or the regional transit authority must work with community organizations to develop guide or travel coach programs to enable disabled or elderly travelers that cannot travel alone or need help learning how to travel via public transit.

The elderly generally travel outside of normal peak periods. Proposing more service hours during midday will immediately increase the mobility elderly, and the disabled. The SMART service area, where the vast majority of growth in elderly population is projected to occur, midday service is sparse. This increase in midday service will allow the elderly and disabled more opportunities to use transit for their elective trips for culture or entertainment.

8.3 Multimodal Connections

The best mobility advantage will come to Southeast Michigan when an improved transit network integrates seamlessly with all forms of transportation. Currently transit does this by using Park and Ride lots, bike racks on some buses and providing walkways and shelters at certain locations. These efforts need to be expanded. Connections to greenways and expanded bicycle facilities will provide additional benefits to the region. Additionally, transit oriented design principals should be established that will educate developers on ways to build properties that raise the prominence of the transit user to the automobile user.

8.3.1 Mobility Hubs

Mobility Hubs is a new concept to provide seamless, multi-modal trips for all types of transportation trips. Rapid transit stations are a natural location for the concept. Integrative approaches such as information technology innovations and

enhancements, service innovations, urban planning and design for accessibility, innovative financing and policies, and other integrative approaches are used to help transit riders in the most efficient mode for their trip. An example of this is the location of car sharing at a rail station to facilitate a trip which may not be accomplished on transit.

8.3.2 Bicycles

Bicycles are an environmentally friendly mode that extends the reach of transit. There are several different ways that bicycle riders interact with transit which are described below. With an increase in bicycle facilities, modal connection between bicycles and transit will increase.

Bikes on Transit

All new transit vehicles in the region should accommodate bikes. Currently all SMART buses are equipped with bike racks. DDOT is testing bike racks with the goal of eventually equipping their fleet. All new services in the Regional Transit Plan should accommodate bikes. On ART and BRT vehicles this should be accomplished on the outside of the vehicle, while on Commuter Rail and LRT the racks will be inside of the vehicles.

Secure Bike Storage At Stations

All new BRT, LRT and Commuter Rail stations should have at a minimum of two bike racks to allow bike parking. In many locations in the country, people will ride a bike to their rapid transit station. This option helps extend a station's access area from ½ mile (the distance that people are willing to walk to rapid transit service) to over a mile. Larger stations that are integrated into the community can house bike stations. Bike stations provide enclosed bicycle parking and facilities to wash up after a long bike ride.

8.3.3 Park and Ride Connections

Park and Ride lots are crucial to the success of transit in lower density areas as well as to access the new rapid transit corridors. Ideally transit riders begin their trip on transit, but it is not always possible. Providing a location for drivers to safely park their vehicles and comfortably wait for transit will help grow ridership. In the western parts of the region this will be a key policy to entice people to use transit. Park and Ride lots should be part of the design for ART, BRT, LRT and Commuter Rail stations. The lots should be built and in place as the service opens.

Transit ridership can be quickly grown by the near term creation of Park and Ride lots to complement the numerous lots currently in service. The RTCC, DDOT, SMART, Macomb, Oakland, Wayne Counties should work with MDOT (who has jurisdiction over most of the major corridors in the region) to identify locations where Park and Ride lots can be conveniently located off of major corridors and highways.

8.3.4 Greenways

The Regional Transit Network should integrate connections greenways when possible. Greenways are corridors that are designed for non motorized travel. Built in urban and suburban environments they provide a pathway for pedestrians, cyclists and skaters and the opportunity for safe travel without concern of motorized vehicles. In some settings in the region, they can help provide a part of a transit trip that normally may not be made. All different modes and pathways of travel that are accessible to transit will help grow transit.

Greenways often provide connections to natural areas which are destinations not often accessible on transit and thus will be a destination for transit users. Future transit and greenway plans in the region should be coordinated as early as possible in the planning stage to promote these connections. Transit stations could also provide services for greenway users. Services such as bike shops (that rent bicycles), sports stores and restaurants can be located at these modal hubs to provide a synergy around transit-greenway nodes.

There should be ongoing coordination with greenways projects to assure that there is harmony between motorized transit, non-motorized and greenway corridors.



9.0 Economic Benefits of Transit Investment

9.1 How Transit Affects the Local Economy

Industry research shows that for every dollar invested in transit, that there is a return of between \$4 and \$8 to the regional economy³. In region after region throughout the country, the development of transit corridors has been shown to accrue benefits to the wider community –through direct benefits of development, but also through indirect benefits related to improved property values, increased sales and the creation of a more attractive investment climate. An expanded transit system provides more transit jobs, provides better access throughout the region and can have a stimulus effect in the corridor and throughout the region.

Transit, when it is part of broader aggressive economic development strategies can enhance the impact of overall economic strategies. In other words, the addition of a transit component as part of economic development strategies can make “good” development results become “great” development results. Transit is a proven ‘accelerant’ of development results. Transit, on its own, does not have as significant an impact as when it is paired with broader economic development strategies.

Current SEMCOG population and employment estimates in the three county Southeast Michigan region are nearly flat, with annual growth around 0.5% between now and 2035. Additionally, corridor level growth in some cases is declining. Without a concerted effort to spur the economic conditions of Southeast Michigan, involving aggressive economic development strategies and the introduction of transit corridors, very little growth can be expected.

Transit has very direct development impacts in station influence areas. There is strong evidence that the presence of a transit station, when supportive development policies are in place, creates development value capture that does not exist in the absence of transit. Greater density is often possible in the vicinity of transit stations because of the ability of transit to deliver customer right to the site and reduces the need for parking at that location. Land that was otherwise used for parking can become revenue generating property. Through research, the maximum benefit has been seen with rail stations, however BRT/ART stations are likely to also have a strong impact on development at stations.

To fully realize the benefits on jobs and housing requires a combination of near term and long term efforts and the use of the best practices and innovative strategies that have been used in other areas. Investment in an expanded transit system, of the type identified in this project can ultimately have an impact on how the region grows, where people live and work and in the development investment climate. There will need to be regional dialogue to address the multi-jurisdictional issues that will ultimately need to be addressed as any rapid transit corridor passes through numerous jurisdictions. Transit corridor implementation will be most effective if it is carried out under a broad framework that establishes regional strategies to advance economic development at the system level. These regional strategies will set a near term goal to establish a positive development and regulatory environment that will be able to “incentivize” transit oriented development before the transit is implemented.

One additional consideration is important to discuss. A number of business site selection professionals have noted that regions with rapid transit and a robust transit system or those that are investing in that type of ‘infrastructure’ for the region are looked upon more favorably in the job location evaluation than those that are not perceived to be addressing mobility in their region. Transportation is one of the many factors that is considered when a corporate location decision is being made. While some of the economic development issues affect where development will take place within the region, this aspect affects whether someone will choose to locate in Detroit rather than Kansas City. Focusing on improving transportation and job access is viewed in a positive light in corporate location decisions.

³ Street Smart: Streetcars and Cities in the Twenty First Century, Shelley Poticha and Gloria Ohland. 2006, Pages 3-4
The Benefits of Public Transportation, Essential Support for a Strong Economy. APTA
Public Transportation and the Nation's Economy: A Quantitative Analysis of Public Transportation's Economic Impact, Cambridge Systematics, Inc. 1999
Portland Streetcar Development Oriented Transit. Portland Office of Transportation and Portland Streetcar, Inc. 2006

9.2 Representative Corridor Economic Development Impact

As part of the Comprehensive Regional Transit Service Plan (CRTSP) project, specific research was conducted on 4 representative / illustrative corridors. This analysis looked at the value of new development directly related to transit. Four sample corridors were selected, each representing different development environments. A similar type of economic development impact studies have been done recently in connection with the Aerotropolis.

The four representative / illustrative corridors studied were:

- Woodward
- Telegraph
- 8 Mile
- M-59

For each of these corridors the economic and fiscal impacts of the proposed phasing was calculated for the four representative / illustrative corridors. (There are more than 4 corridors being recommended, so the quantitative results that are obtained in the evaluation of the 4 representative / illustrative corridors provides a lower quantification of the overall impacts than if the full set of recommended corridors were implemented. The RTCC can use the methodology established in this analysis to project the impact of implementation in more corridors.)

9.2.1 Economic Impact of 4 Representative Corridors

The economic impact (again related just to the 4 representative / illustrative transit corridors) at 2035 buildout is seen below:

- 30,000 new jobs (direct and indirect impacts)
- \$1.4 billion in payroll
- 10,800 new housing units created
- \$1.9 billion in new development value created
- \$224 million in annual retail sales

9.2.2 Fiscal Impact of 4 Representative Transit Corridors

In addition to the economic impact of the development created by the introduction of these 4 representative transit corridors, a fiscal impact can be calculated. The fiscal impact is the effect of this development on tax revenue based solely on the new development that can be attributed to transit implementation. The development generated the 4 representative transit corridors will create \$87 million in annual tax revenue to the State of Michigan and local jurisdictions. The fiscal benefit from existing development that increases in value as a result of the transit corridor implementation is over and above the \$87 million annually.

10.0 Network Costs

The capital and operating costs of all the proposed Regional Transit Network are listed below. Capital expense for each service includes vehicles and facilities, including support facilities for the maintenance of vehicles. Operating costs are the yearly costs to run the network. The majority of operating costs covers labor and is estimated to increase every year. The capital costs are listed as total expenses for the time period listed. The 2009-2012 costs are for ART only and do not include any LRT costs. The operating costs are listed as the yearly operating costs during the time period listed. Commuter rail projects are the responsibility of SEMCOG and MDOT and all the costs have been separated to reflect this.

10.1 Capital Costs

Corridor Development – ART, BRT and LRT(Section 7.0); (Section Service Frequency Increase (Section 4.2.2); New Routes and Additions (Sections 4.2.1 and 4.2.3); Job Connectors (Section 4.1); Connector Service (Section 4.4); People Mover Enhancements (Section 3.3.2); Paratransit (Section 4.3); and Bus Stop Enhancement Shelters (Section 4.5).

FTA New Starts funding for capital costs is available from the Federal Government, theoretically at a match rate of 80% Federal/20% Local. However, recently Federal New Start Funding has typically required a 50% Local Match. As a conservative estimate, a local match of 50% is assumed for capital costs. The funding that Southeast Michigan and/or the State of Michigan will have to provide each year to build the Regional Transit Network is listed as Total Annualized Capital Cost. Again, all costs are listed in current year dollars (2008).

These costs grow over time, anticipated to peak in the 2016-2020 time period with the addition of two commuter rail lines (Planning, implementation and funding is the responsibility of SEMCOG and MDOT), three LRT corridors, three BRT corridors and five ART corridors. Job Connector costs drop over time because it is anticipated that the service will be scaled back as rapid transit service grows in the region.

10.2 Operating Costs

Operating costs listed include the costs for providing all the new service proposed in this report with the except of the commuter rail. Those costs are listed separately because the service will be the responsibility of SEMCOG and MDOT. The operating cost for the new service in the Regional Transit Network are anticipated to almost double the current combined operating costs of DTC, DDOT and SMART of \$293 million⁴. While these projected operating costs are significant, when compared to other areas, Southeast Michigan will still have a per capita expense lower than the national average of \$184.

Beginning in the late 1990s federal funding for operating transit was discontinued. Capital funding is permitted to be used for some maintenance costs, but on the whole, operating costs must be funded from non-federal sources. All operating costs for transit, like the capital match, must come from local sources. The bottom half of Table 6 details the annual operating cost for the Regional Transit Network, which increases from \$352 million to \$600 million per year.

⁴ Reported 2006 Budgets, 2008 National Transit Database

	TIME PERIODS					Total
	2009-2012*	2013-2015	2016-2020	2021-2025	2026-2035	
CAPITAL EXPENSES						
Corridor Development (+/- 20%)	\$82,693,000	\$1,280,078,000	\$3,503,291,000	\$2,944,696,000	\$2,607,252,000	\$10,418,010,000
Expanded Fixed Routes		\$22,800,000				\$22,800,000
New Routes & Additions		\$35,600,000				\$35,600,000
Job Connectors		\$2,100,000	\$1,300,000	\$700,000	\$700,000	\$4,800,000
Connector Service		\$1,820,000	\$700,000			\$3,920,000
People Mover Enhancements		\$17,000,000				\$17,000,000
Paratransit		\$1,800,000	\$1,170,000	\$1,170,000	\$1,170,000	\$5,310,000
Shelters (+/- 20%)		\$1,125,000	\$4,500,000	\$4,500,000	\$9,000,000	\$19,125,000
TOTAL	\$82,693,000	\$1,362,323,000	\$3,510,961,000	\$2,951,766,000	\$2,618,822,000	\$10,526,565,000
Total Annualized Capital Cost	\$41,346,500	\$454,107,667	\$702,192,200	\$590,353,200	\$261,882,200	\$389,872,778
Local Annualized Match Share (50%)	\$41,346,500	\$227,053,833	\$351,096,100	\$295,176,600	\$130,941,100	\$194,936,389
Commuter Rail (SEMCOG and MDOT)		\$147,560,000	\$315,840,000			\$463,400,000
OPERATING COSTS						
2008 Base Annual Operating Costs	\$293,000,000	\$293,000,000	\$293,000,000	\$293,000,000	\$293,000,000	
Incremental Annual Operating Costs (+/- 10%)	\$59,394,534	\$251,816,000	\$291,602,000	\$302,153,000	\$307,070,000	
TOTAL ANNUAL OPERATING COSTS	\$352,394,534	\$544,816,000	\$584,602,000	\$595,153,000	\$600,070,000	
Per Capita Expense including current \$293,000 funding (+/- 3%). **	\$86.20	\$102.56	\$106.52	\$107.81	\$109.45	
TOTAL ANNUAL OPERATING AND CAPITAL SHARE COSTS		\$771,869,833	\$935,698,100	\$890,329,600	\$731,011,100	
Incremental Annual Commuter Rail Costs (SEMCOG and MDOT)		\$10,001,000	\$24,035,000	\$24,035,000	\$24,035,000	

* ART only

** NOTE: The current per capita funding in the Southeast Michigan region is \$75 per capita. The current average per capita transit funding for the top 25 municipalities in the USA is \$184.

Table 6 Estimated Costs of Regional Transit Network

11.0 Funding the Regional Transit Network

Implementation of the proposed regional transit network will require additional funding to be generated. In addition to funding from the Federal government that can be used to help build the system, funds will be needed to operate the system. Operating funds generally must be raised at a local or state level.

11.1 Needs

- The RTCC will need to develop a plan to leverage the maximum level of Federal funds for capital projects (new vehicles, enhancements to bus stops, ART/BRT/LRT development). It will also be necessary to identify a dedicated source of local funds.
- The RTCC will also need to identify a source of dedicated local/regional funding for transit projects. The dedicated funding source can be used to match the Federal capital dollars or to bond capital projects. The dedicated funding source is also needed to fund the annual operating cost of service.
- The RTCC or the regional transit organization will need to work closely with the FTA to study and evaluate Private Public Partnerships (P3) as a method for funding corridor development and operations. The FTA is currently working on a Private Public Partnership Pilot Project ("Penta -P") with three Regional Transit Authorities to develop models for future P3 programs. P3 programs are intended to provide a method of sharing risk and accelerating the speed of project funding approvals.

In the industry, there is a very wide array of how other regions obtain their dedicated local funding – everything ranging from property tax (or millage) to employer head tax to sales tax. Nearly 2/3 of regions, however, have chosen a sales tax as the basis of their dedicated funding source. The type of funding source selected depends very much on local politics and the types of agreements that can be brokered.

Discussions at the Federal level about a new Federal Transportation bill are commencing. (The current 6-year transportation funding bill is called SAFETEA-LU - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users is in place through 2009). With each 6-year transportation bill, renewed and revised objectives guide its development. It is essential that the Southeast Michigan region engages in discussions at the federal level with staff and elected delegations about the vision of the region and the capital funding needs to make the vision a reality. The time is right to have these discussions now.

Any efforts to raise funding for a regional transit organization must be closely coordinated with other legislative or ballot initiatives, including the SMART millage renewal in 2010.

11.2 Modal Funding

Federal funding will need to be obtained to support a portion of the capital costs related to building rapid transit corridors and enhancing bus stops. Often, a significant challenge exists within a region to move from the level of transit capital funding that is currently in place to a level of funding that allows for the implementation of new services. Help in the effort will be sought by pursuing Private Public Partnerships as the matching local source to help facilitate quicker access to Federal funds.

For this plan, the goal would be to begin implementation of ART services through formula or earmark federal sources (Bus / Bus Discretionary, Clean Fuels, Section 5307 funds) or the use of flexible transportation funds from Surface Transportation Program. Many states choose to provide transit projects access to this flexible funding pool.

Implementation of Bus Rapid Transit and Light Rail projects would most likely require successful pursuit of New Starts funding from the Federal Transit Administration. There is a long lead time on projects that are successful achieving New Starts funding. The competition from throughout the country for funding from this is very strong and the program is oversubscribed. There is a long back up of projects that are seeking projects through this source. It is possible that there will be changes, possibly even substantial changes, to this program with the next reauthorization of the transportation bill, but then nature of these changes and the impact of a new incoming president won't be known for some time.



12.0 Next Steps for RTCC

There are a number of recommended Next Steps for the Regional Transit Coordinating Council to advance regional transit in Southeast Michigan and to meet the projected network implementation plan.

- Adopt the Comprehensive Regional Transit Service Plan for Southeast Michigan
- Work with DDOT, DTC and SMART to implement the Opportunities for Enhancement Through Coordination
- Commence planning for Arterial Rapid Transit funding and implementation
- Begin the process of establishing a regional transit organization with the powers to plan, fund and operate transit service
- Begin planning for 2013-2015 network improvements (BRT on Gratiot and LRT extension from Grand Boulevard to 11 Mile)
- Obtain a dedicated funding source
- Implement the regional transit organization including staffing and institutional arrangements

